

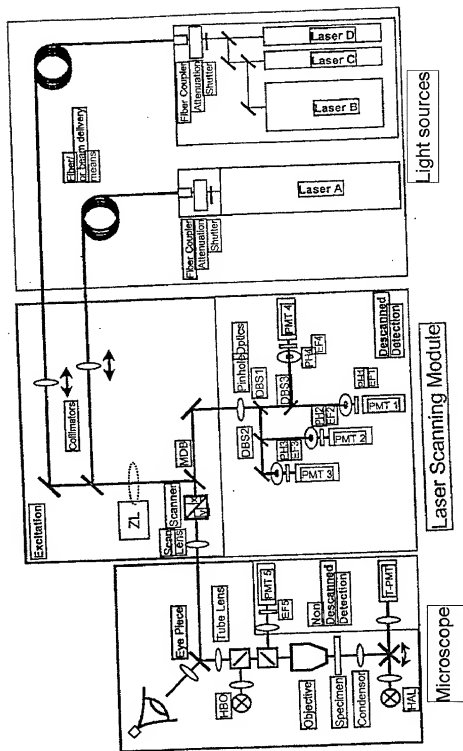
a.)

b.)

a) Single-photon absorption

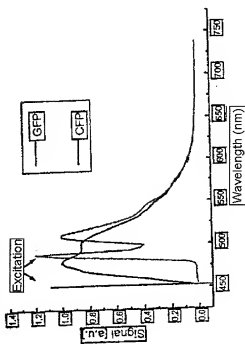
b) Multiphoton absorption

Figure 1:



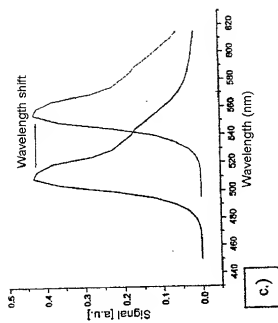
LSM construction (prior art)

Figure: 2



b.)

a.)

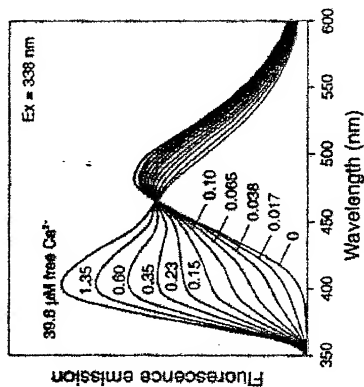


c.)

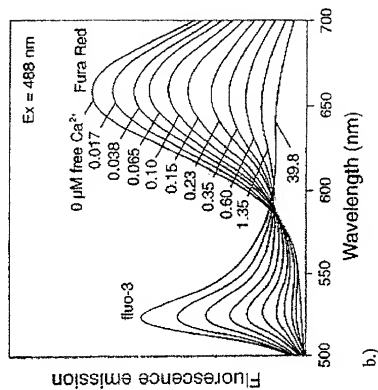
Typical spectra a) Dyes, b) fluorescent proteins

c) wavelength shift as a function of environment, d) FRET

Figure: 3



a.)



b.)

Figure: 4

Typical spectra with ratiometric measurements

a) a dye with emission ratio; b) two dyes with ion-dependent signals

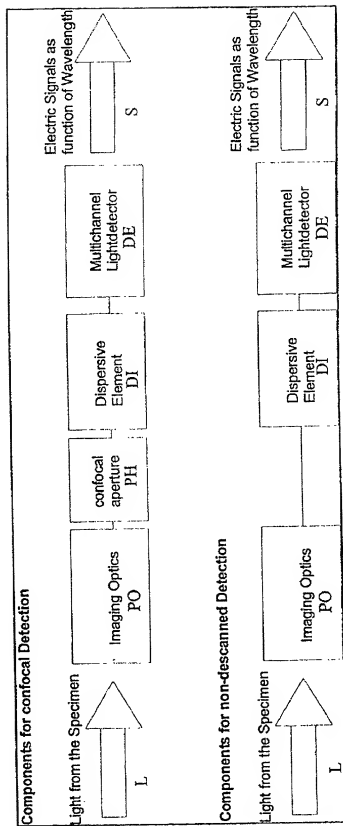
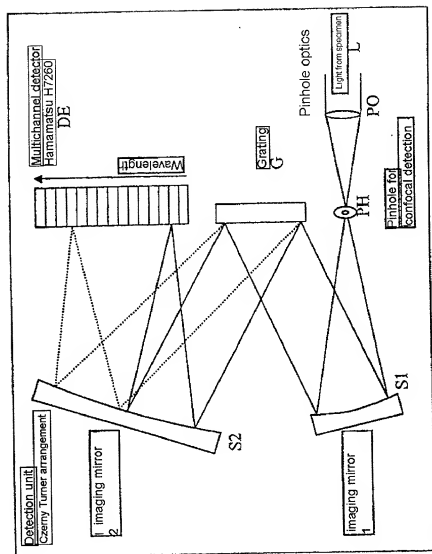


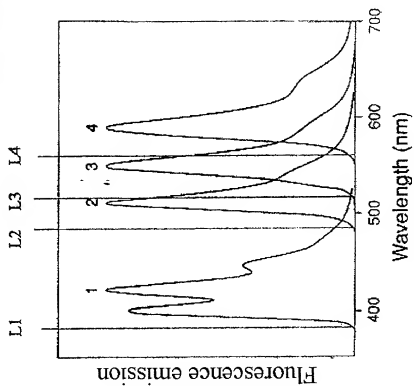
Figure: 5

Block diagram showing construction of detector unit-optics

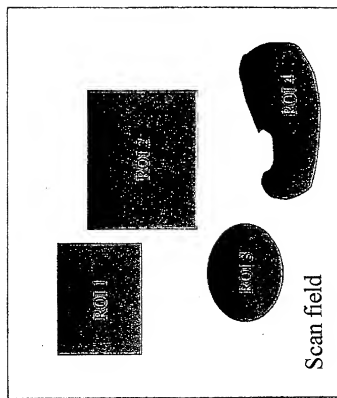


**Figure: 6**

Example for detector unit-optics construction



b.)

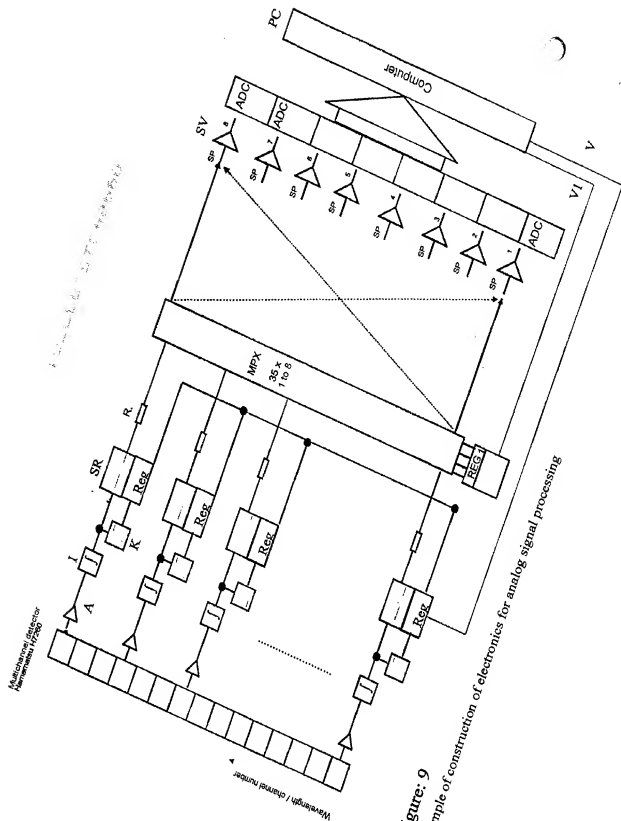


a.)

Figure: 7







**Figure: 9**

Example of construction of electronics for analog signal processing